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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Muthiah Manoharan et al.

Serial No.: 10/058,740

Group Art Unit: Not yet assigned

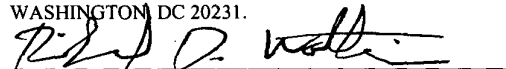
Filing Date: January 28, 2002

Examiner: Not yet assigned

For: METHODS OF MODULATING PHARMACOKINETICS OF  
OLIGONUCLEOTIDES

DATE OF DEPOSIT: 5/2/02

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Assistant Commissioner for Patents  
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Dear Sir:

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §1.56 and in accordance with 37 C.F.R. §§1.97-1.98, information relating to the above-identified application is hereby disclosed. Inclusion of information in this statement is not to be construed as an admission that this information is material as that term is defined in 37 C.F.R. §1.56(b).



In accordance with §1.97(b), since this Information Disclosure Statement is being

filed either within three months of the filing date of the above-identified application, within three months of the date of entry into the national stage of the above identified application as set forth in §1.491, before the mailing date of a first Office Action on the merits of the above-identified application, or before the mailing date of a first office action after the filing of request for continued examination under §1.114, no additional fee is required.

- ☐ In accordance with §1.129(a), this Information Disclosure Statement is being filed in connection with ☐the first or ☐second After Final Submission, therefore:
- ☐ Certification in Accordance with §1.97(e) is attached; or
- ☐ The fee of \$180.00 as set forth in §1.17(p) is attached.
- ☐ In accordance with §1.97(c), this Information Disclosure Statement is being filed after the period set forth in §1.97(b) above but before the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311, or before an action that otherwise closes prosecution in the application, therefore:
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- ☐ The fee of \$180.00 as set forth in §1.17(p) is attached.
- ☐ In accordance with §1.97(d), this Information Disclosure Statement is being filed after the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311 but before, or simultaneously with, the payment of the Issue Fee, therefore included are: Certification in Accordance with §1.97(e); and the submission fee of \$180.00 as set forth in §1.17(p).
- ☒ Copies of each of the references listed on the attached Form PTO-1449 are enclosed herewith.
- ☐ Copies of references listed on the attached Form PTO-1449 are enclosed herewith EXCEPT THAT:
- ☐ In view of the voluminous nature of references [list as appropriate], and the likelihood that these references are available to the Examiner, copies are not enclosed herewith.
- ☐ In accordance with §1.98(d), copies of the following references listed on the attached Form PTO-1449 are not enclosed herewith because they were

previously cited by or submitted to the U.S. Patent and Trademark Office in patent application(s) for which a claim for priority under 35 U.S.C. §120 have been made in the instant application:

- ☐ Copies of references [list as appropriate] listed on the attached Form PTO-1449 were previously cited by or submitted to the Patent and Trademark Office in prior application Serial No. , filed .
- ☐ If any of the foregoing publications are not available to the Examiner, Applicant will endeavor to supply copies at the Examiner's request.

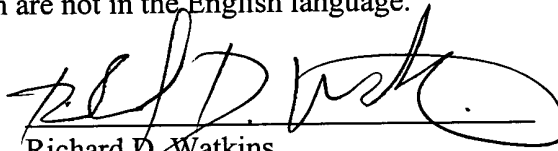
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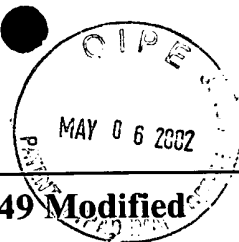
There are no listed references which are not in the English language.

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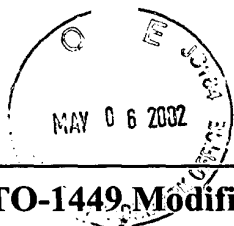
May 3, 2002

  
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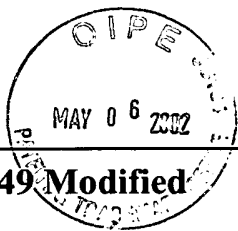
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<b>Form PTO-1449 Modified</b>  List of Patent and Publications Cited by Applicant (Use several sheets if necessary)  U.S. Department of Commerce Patent and Trademark Office		Docket No. <b>ISIS-4853</b>	Serial No. <b>10/058,740</b>
		Applicant <b>Muthiah Manoharan et al.</b>	
		Filing Date <b>January 28, 2002</b>	Group <b>Not yet Assigned</b>
<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>			
	<b>AA</b> ✓	Anklam, E. et al., "Pulse Radiolytic Studies of 1-Halo-2-(methylthio)ethanes in Hexane and 1,2-Dichlorethane: Formation of an Intermolecular Species with a Three-Electron Bond between Sulfur and Iodine", <i>Helv. Chim. Acta</i> , <b>1987</b> , 70, 2110-2117	
	<b>AB</b> ✓	Baker, A. D. et al., "Ultra long-range through-bond interactions in dithiaspirane disulfoxides as revealed by photoelectron spectroscopy", <i>Tetrahedron Lett.</i> , <b>1983</b> , 24(29), 2957-2960	
	<b>AC</b> ✓	Bannwarth, W., "Synthesis of Oligodeoxynucleotides by the Phosphite-Triester Method Using Dimer Units and Different Phosphorous-Protecting Groups," <i>Helvetica Chim. Acta</i> , <b>1985</b> , 68, 1907-1913	
	<b>AD</b> ✓	Bayer, E. et al., "Improved Conditions for Solid Phase Synthesis for Oligonucleotides on PS-PEG Copolymers," <i>Z. Naturforsch.</i> , <b>1995</b> , 50b, 1096-1100	
	<b>AE</b> ✓	Beaucage, S. L. et al., "Deoxynucleoside Phosphoramidites-A New Class of Key Intermediates for Deoxypolynucleotide Synthesis," <i>Tetrahedron Letts.</i> , <b>1981</b> , 22(20), 1859-1862	
	<b>AF</b> ✓	Beaudry et al., "Determination of drug-plasma protein binding using human serum albumin chromatographic column and multiple linear regression model," <i>Biomed. Chromatogr.</i> , <b>1999</b> , 13, 401-406	
	<b>AG</b> ✓	Divakar, K. J. et al., "4-(1,2,4-Triazol-1-yl)-and 4-(3-Nitro-1,2,4-triazol-1-yl)-1-(β-D-2,3,5-tri-O-acetyl-arabinofuranosyl) pyrimidin-2(1H)-ones. Valuable Intermediates in the Synthesis of Derivatives of 1-(β-D-Arabinofuranosyl)cytosine (Ara-C)," <i>J.C.S. Perkin I</i> , <b>1982</b> , 1171-1176	
	<b>AH</b> ✓	Egholm, M. et al., "Peptide Nucleic Acids (PNA). Oligonucleotide Analogues with an Achiral Peptide Backbone," <i>J. Am. Chem Soc.</i> , <b>1992</b> , 114, 1895-1897	
	<b>AI</b> ✓	Egholm, M. et al., "Recognition of Guanine and Adenine in DNA by Cytosine and Thymine Containing Peptide Nucleic Acids (PNA)," <i>J. Am. Chem Soc.</i> , <b>1992</b> , 114, 9677-9678	
	<b>AJ</b> ✓	Khorana, H. et al., "Studies on Polynucleotides: Total Synthesis of the Structural Gene for an Alanine Transfer Ribonucleic Acid from Yeast," <i>J. Mol. Biol.</i> , <b>1972</b> , 72, 209-217	
	<b>AK</b> ✓	Knudsen, H. et al., "Antisense Properties of duplex-and triplex-forming PNA," <i>Nucl. Acids Res.</i> , <b>1996</b> , 24(3), 494-500	
<b>EXAMINER</b>		<b>DATE CONSIDERED</b>	



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<b>OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)</b>			
	<b>AL</b> ✓	Kumar, G. et al., "Improvements in Oligodeoxyribonucleotide Synthesis: Methyl N,N-Dialkylphosphoramidite Dimer Units for Solid Support Phosphite Methodology," <i>J. Org. Chem.</i> , <b>1984</b> , 49, 4905-4912	
	<b>AM</b> ✓	Kumar, P. et al., Express Protocol for Functionalization of Polymer Supports for Oligonucleotide Synthesis," <i>Nucleosides and Nucleotides</i> , <b>1996</b> , 15(4), 879-888	
	<b>AN</b> ✓	LaFrancois, C. J. et al., "Synthesis and Characterization of Isotopically Enriched Pyrimidine Deoxynucleoside Oxidation Damage Products," <i>Chem. Res. Toxicol.</i> , <b>1998</b> , 11(1), 75-83	
	<b>AO</b> ✓	Miura, K. et al., "Blockwise Mechanical Synthesis of Oligonucleotides by the Phosphoramidite Method," <i>Chem Pharm. Bull.</i> , <b>1987</b> , 35(2), 833-836	
	<b>AP</b> ✓	Montgomery, J. et al., "Synthesis of Potential Anticancer Agents. XX. 2-Fluoropurines," <i>Chem. Soc.</i> , <b>1960</b> , 82, 463-468	
	<b>AQ</b> ✓	Nielsen, P. E. et al., "Sequence-Selective Recognition of DNA by Strand Displacement with a Thymine-Substituted Polyamide," <i>Science</i> , <b>1991</b> , 254, 1497-1500	
	<b>AR</b> ✓	Nielsen, P. E. et al., "Strand Displacement to Binding of a Duplex-Forming Homopurine PNA to a Homopyrimidine Duplex DNA Target," <i>J. Am. Chem. Soc.</i> , <b>1996</b> , 118, 2287-2288	
	<b>AS</b> ✓	Patel, D. J., "Marriage of Convenience," <i>Nature</i> , <b>1993</b> , 365, 490-492	
	<b>AT</b> ✓	Rasmussen, H. et al., "Crystal structure of a peptide nucleic acid (PNA) duplex at 1.7 Å resolution," <i>Nature Struct. Biol.</i> , <b>1997</b> , 4(2), 98-101	
	<b>AU</b> ✓	Reese, C. B. et al., "The Chemical Synthesis of Oligo- and Poly-Nucleotides by the Phosphotriester Approach," <i>Tetrahedron</i> , <b>1978</b> , 34, 3143-3179	
	<b>AV</b> ✓	Ross, B. S. et al., "A novel and economical synthesis of 2'-O-alkyl-uridines," <i>Nucleosides Nucleotides</i> , <b>1997</b> , 16(7-9), 1641-1643	
	<b>AW</b> ✓	Wolter, A. et al., "Polymer Support Oligonucleotide Synthesis XX: Synthesis of a Henectacosa Deoxynucleotide by use of a Dimeric Phosphoramidite," <i>Nucleosides &amp; Nucleotides</i> , <b>1986</b> , 5(1), 65-77	
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List of Patent and Publications  
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**Muthiah Manoharan et al.**

Filing Date  
**January 28, 2002**

Group  
**Not yet Assigned**

**U. S. PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Name	Class	Subclass
	<b>AX</b>	5,149,798	9/22/92	Agrawal et al.	536	27
	<b>AY</b>	5,539,082	7/23/96	Nielsen et al.	530	300
	<b>AZ</b>	6,239,272	05/29/01	Beigelman et al.	536	24.5
	<b>BA</b>	09/115,043	7/14/98	Manoharan et al.		

**FOREIGN PATENT DOCUMENTS**

Examiner Initial		Document No.	Date	Country	Translation	
					YES	NO
	<b>BB</b>	92/20702	11/26/92	WO		
	<b>BC</b>	92/20703	11/26/92	WO		
	<b>BD</b>	93/12129	6/24/93	WO		

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